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AUG 17 2006

REMARKS

Reconsideration of this Application is respectfully requested. In response to the Office Action mailed May 17, 2006, Applicants have amended claims 1 and 4 to include previously pending claim 32, to place the application in better condition for appeal, as well as amending claims 3, 5, 7, 9, 10, 12, 21, 22, and 24 to overcome the Examiner's rejections and to now even more clearly claim Applicant's invention. These amendments are believed to be fully supported and are believed to contain no new matter. Entry of the amendments is respectfully requested. Claims 1-33 are pending.

Based on the above Amendment and the following Remarks, Applicants respectfully request that the Examiner reconsider and withdraw all outstanding objections and rejections.

Rejections under 35 U.S.C. § 112, 2nd ¶

On page 3, the Action rejects claims 3-33 as being indefinite. The Examiner asserts that several claims lack clarity. Applicants traverse the rejections, but to advance prosecution have attempted to amend the claims overcome the Examiner's concerns and to now even more clearly claim the inventions, and accordingly believe that the rejections are now moot.

The moisture separator has been removed from claim 3 and the in situ gas stream from claim 7. The examiner notes a "power supply" of claim 3 appears in claim 1, Applicants respectfully notes the power supply does not appear in claim 3, and traverses the rejection.

The Examiner asserts that in claims 3, 7, 10, and 28, that a calibrator, calibration material or calibration gas are unclear. Applicants respectfully disagree and traverse the rejection, and respectfully note that these terms would be apparent to those skilled in the art. A calibrator, calibration material, or calibration gas in this type of system, as will be apparent to those skilled in the art, may use, e.g., an input of known attributes to calibrate a sensor and/or detector subsystem. The terms are well known in the art. There are 2,780 patents including the term "calibrator", 179 patents including the term "calibration material", and 717 patents describing "calibration gas", thus Applicants assert that the meaning of these terms are well known in the art, and thus the terms are believed to be clear.

The Examiner asserts that claims 12-30 are unclear stating that a "MIP" is unclear since the '956 patent is only an example. Applicants respectfully disagree with the conclusion the Examiner is drawing. Since the Examiner is conceding that at least one example of a MIP exists, then the claim element appears clear. Even so, a careful reading of the specification provides several exemplary embodiments of various alternative MIPs, such as, an exemplary embodiment pictured and described as set forth in FIGs. 4A, 4B, 4C, and 4D of Applicants' invention. Any sensing device including a membrane interface is a membrane interface probe (MIP). Applicants thus traverse the rejection, and respectfully note that the term MIP is clear.

The Examiner asserts that claims 4-33 are unclear for including the term "selectably". As will be apparent to those skilled in the relevant art, "selectably" means capable of selection, or able to be selected. Searching "selectably" on search website www.Yahoo.com, 2,560 hits of the word selectably occur, many of which appear to occur in granted US Patent Applications, which at least would seem to implicitly indicate that the term is clear. Indeed, 7,382 U.S. patents have been granted including the term selectably. Thus, Applicants traverse the rejection. However, in the interests of advancing prosecution, Applicants have amended independent claim 4 to use the term selectively, in hopes that the Examiner will find the amended claims allowable. Applicants request that the Examiner withdraw all the rejections under 112, 2nd paragraph.

Rejections under 35 U.S.C. § 102 (b)

On page 3, the Action rejects claims 1-11 and 33 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,447,055 to Thompson et al. (hereinafter "Thompson"). Applicants respectfully traverse this rejection.

For at least the following reasons, Applicants respectfully note that Thompson fails to anticipate amended claims 1 or 4.

Amended claim 1 recites "A **mobile** enhanced scanning solutions module comprising: a flow control subsystem; a detector subsystem coupled to said flow control subsystem; a moisture separator subsystem coupled to said flow control subsystem; a sampling subsystem coupled to said flow control subsystem; a **global positioning system (GPS) receiver** integrated with a **mobile** data acquisition system configurable to allow geo-referencing of data acquired from at least one of said

detection subsystem and/or said sampling subsystem; and a software control subsystem coupled to at least one of said flow control subsystem, said detector subsystem, said moisture separator subsystem, and/or said sampling subsystem, wherein said flow control subsystem is adapted to be at least one of configured and/or reconfigured to use a plurality of operator-selectable measurement subsystems prior to exhaust." (Emphasis added). Similarly, amended claim 4 recites "A **mobile** enhanced scanning solutions module comprising: a detector subsystem configured to be selectively coupled to an in situ gas stream; a sampling subsystem configured to be selectively coupled to the in situ gas stream; a **global positioning system (GPS) receiver** integrated with a **mobile** data acquisition system configurable to allow geo-referencing of data acquired from at least one of said detection subsystem and/or said sampling subsystem; and a software control subsystem coupled to said detector subsystem, and said sampling subsystem, wherein the enhanced scanning solutions module is adapted to be at least one of configured and/or reconfigured to use a plurality of operator-selectable measurement subsystems prior to exhaust." (Emphasis added). Applicant's claimed invention is directed to a mobile data acquisition system for georeferencing, using a gps receiver, data acquired from an operator-selectable detection and/or sampling measurement subsystems. For an exemplary embodiment, see FIG. 11, for example. Applicant's invention is used to acquire sensor data from subsurface sampling and detection measurement subsystems, and to georeference the data from moveable sensing devices (see claim 32, for example).

Thompson, et al. teaches a stationary, fixed, inground, leak detection, alarm and notification system. Thompson fails to teach or suggest a feature of previously pending claim 32, now incorporated into both claims 1 and 4, a global positioning system (GPS) receiver. Thompson does not teach or suggest the GPS receiver, as required by claims 1 and 4. Advantageously, the GPS receiver allows georeferencing of samples obtained by the sampling and/or detection subsystems. The GPS receiver is used since Applicant's invention is mobile and contemplates mobile data acquisition from various locations. Unlike Thompson's stationary leak detection system, Applicants' claimed invention contemplates a mobile system for performing operator-selectable geo-referenced measurements obtaining samples and/or detection subsystem output data. Since Thompson does not move, there is no need to use a GPS receiver. Thompson does not contemplate, teach or suggest any form of geo-referencing of data. Applicant's invention on the other hand,

contemplates georeferencing acquired data. Indeed, in new claim 32, samples may in an exemplary embodiment be georeferenced in at least 3 dimensions. Claim 32 sets forth, *inter alia*, "a depth measurement device coupled to said global positioning system (GPS) receiver integrated with said mobile data acquisition system configured to allow simultaneous geo-referencing in at least three (3) dimensions of at least one of said detection subsystem and/or said sampling subsystem, in an environmental subsurface, wherein said environmental subsurface comprises an area beneath at least one of a surface of earth, and/or a surface of a body of water, and wherein said in situ gas stream is coupled to a moveable direct reading sensor in direct contact with at least one of soil, water and/or vapor." The use of a moveable direct reading sensor is not taught or suggested by Thompson. It is important to note that a GPS receiver alone is only be able to determine a position on the surface of the Earth, where a GPS signal may be obtained. Applicants respectfully note, as will be apparent to those skilled in the art, the GPS system is a system of 27 Earth orbiting satellites (24 of which are in operation and three extra remain available in the event of a failure). Applicants further, respectfully note, that a GPS receiver, as will be apparent to those skilled in the art, attempts to locate four or more of these satellites based on trilateration, and can determine latitude, longitude, and surface altitude. It is important to note that GPS requires line-of-sight view of satellites, meaning that a GPS signal will pass through clouds, glass, and plastic, but will not go through most solid objects, such as a building, a mountain, underwater, or underground.

Therefore, amended claims 1 and 4 are believed in condition for allowance and allowance thereof is respectfully requested.

Claims 2-3 and 33, and 5-32, which depend from allowable claims 1 and 4, respectively, are also believed to be in condition for allowance because of their dependence on allowable claims.

Further, Thompson fails to teach or suggest claim 33. Applicants' claim 33 sets forth a feedback to the detector subsystem which allows operator-selectable reconfiguration based on feedback. Thompson provides no feedback from any subsystem to a flow control subsystem, as set forth in Applicants' claimed invention.

Rejections under 35 U.S.C. § 103 (a)

Beginning on page 5, the Action rejects claims 12-22, 26-29, and 31-32 as being unpatentable under 35 U.S.C. § 103(a) over Thompson in view of U.S. Patent No. 5,639,956 to Christy (hereinafter "Christy"). Applicants respectfully traverse this rejection. Christy and Thompson, alone or in combination, fail to teach or suggest all the elements of claims 1, 4 and the dependent claims which depend therefrom.

Applicants respectfully note that for at least the reasons mentioned above with reference to claims 1 and 4, these dependent claims are patentable over the applied references.

The Examiner on page 6, with reference to claim 32 asserts that "Christy anticipates a GPS system by teaching the use of a depth-measuring system". Applicants respectfully disagree. Applicants respectfully note that a GPS system is not a depth measuring system. Indeed, as noted above, a GPS receiver may only determine an altitude above the surface of the ground, in line-of-sight view of GPS satellites. A GPS system may be used to identify a location in latitude and longitude via trilateration, but a GPS receiver may not be used to measure a depth below ground, in the subsurface, underground, or underwater, since a GPS receiver must be in line-of-sight to satellites to receive GPS satellite signals. Thus, Applicants respectfully note, use of a depth-measuring system ("string and pail") at most teaches a system for measuring a depth below the earth's surface in only a z dimension underground, which may be used along with a GPS receiver, as noted in amended claim 32, but does not teach or suggest a global positioning system receiver for georefencing data in either of an x or y dimension (latitude or longitude). Thus as noted above with reference to amended claims 1 and 4, these, and the remaining claims which depend therefrom are patentable over the applied references, Thompson and Christy, alone or in combination, which do not teach or suggest use of a GPS receiver and a mobile data acquisition system to georeference data acquired from operator-selectable measurement subsystems.

Further, the Examiner asserts that many of the claimed features would have been obvious to a person having ordinary skill in the art. Applicants respectfully disagree, and respectfully note that a proper prima facie case is proven when all the elements of the claimed invention are shown and a proper motivation to combine is indicated. Christy and Thompson, alone or in combination, do not teach or suggest all the elements of Applicants' claimed invention. Applicants respectfully note

that it would not have been obvious to add the features of Applicants' claims to the systems of Christy and Thompson, alone or in combination. The applied combination of Thompson and Christy does not teach or suggest a "a global positioning system (GPS) receiver integrated with a mobile data acquisition system configurable to allow geo-referencing of data acquired from at least one of said detector subsystem and/or said sampling subsystem".

The Examiner asserts that there is a motivation to combine Christy with Thompson. Applicants respectfully note that the examiner has improperly combined the references. Applicants respectfully note that Christy's probe is a driven probe whose use is intended for dynamic movement through the subsurface of the ground and at a much deeper depth than contemplated by Thompson. Also, Christy's driven probe includes only a single permeable membrane. Thompson teaches a non-driven, stationary, fixed, non-movable leak detection system fixed in position in the upper subsurface of the ground. Thompson contemplates the use of a gas permeable tubular member having a plurality of apertures as described in another Thompson patent, U.S. Patent 4,725,551, as referred to in Thompson. It would not make sense to use a driven probe as described in Christy in a leak detection system as it only has a single, very small membrane. Using a driven probe in a fixed position would only identify leaks in a very small area (the size of the membrane, Christy's Patent '956 in column 3 indicates a membrane of .058 square inches), causing Thompson's invention to become inoperative in combination with Christy. Thus, it would not have been obvious to combine the two inventions, and to do so would thus not create a working system as the Christy probe would only identify a leak in a very small area (just over one half of one tenth of a square inch) in direct proximity to the membrane, as compared to Thompson's system. Conventionally (prior to Applicants' invention), driven probes like Christy have only included a single permeable membrane, see Christy, to provide maximum tensile strength of the probe during driving of the driven probe into the ground. If a probe as taught by Thompson in the '551 patent were used in Christy's system, the multiple aperture probe might likely snap while being driven into the ground with its lack of tensile strength with its many apertures. Indeed, Applicant's invention has suggested for the first time the use of more than one membrane in a driven probe to increase sensing coverage (see claim 16, for example). As noted, it would not have been obvious to include more than one membrane in a driven probe, it was conventionally believed that the use of multiple

aperture driven probes could decrease the strength of the driven probe. Applicants respectfully note that it seems that the Examiner is using Applicant's Specification in hindsight as a roadmap to select references without a proper motivation to combine, to allegedly obtain Applicant's claimed invention. Thus Applicants respectfully note that a person of ordinary skill would not have been motivated to combine the Christy and Thompson.

As noted above, Applicant asserts claim 16 is patentable over the applied references. Applicant notes that it would not have been obvious to include a plurality of membrane interfaces in a driven membrane interface probe. Christy does not teach or suggest the use of more than one membrane interface. If Christy had contemplated the use of more than one membrane interface at the time of filing, it would seem that mention of "at least one" would have been used at least once in the application, if contemplating the use of a plurality of membranes, considering that Christy refers to "at least one particular chemical compound", and considering that prior art fixed probes as described in Thompson included a plurality of apertures. To state that a single membrane probe makes obvious a multiple membrane probe is tantamount to saying the prior existence of a unicycle makes obvious a later designed bicycle, tricycle, automobile, airplane, 16 wheel tractor trailer, 2 wheeled segway®, etc. Applicants have designed a probe for improved circumferential testing, while ensuring sufficient probe tensile strength to allow driving the multiple membrane interface probe. Thus, Applicants respectfully note that it would not have been obvious to use multiple membrane interfaces in a driven probe. There is a longfelt need for driven probes having increased sensor coverage, an important indicia of non-obviousness. Thus claims 16, 17, 18 and 19 are patentable for at least these reasons.

Regarding claim 20, the Examiner asserts that Christy teaches or suggests a watertight housing and couplings. Christy's probe is not watertight, indeed Applicant purchases many of the commercial embodiment and they all rust from the lack of watertightness, requiring replacement of an entire probe. There are no field-servicable or modular parts for Christy's commercial probes and thus entire probes must instead be replaced upon mechanical or electrical failure. There is a longfelt need for probes of this sort, an important indicia of non-obviousness. Thus claims 20, 21-25 are patentable for at least these reasons.

Regarding claims 23 and 24, the Examiner also asserts that Christy's cavity renders obvious receiving a field insertable and removable cartridge heating element. The Applicant respectfully disagrees and respectfully notes that the Examiner has not proven her prima facie case of obviousness. Applicant respectfully notes that Christy and Thompson, alone or in combination, fail to teach or suggest a heater.

Regarding claims 26, 27, and 29, the Examiner asserts that Christy has a removable trap. Applicant respectfully notes that Christy fails to teach or suggest a trap as set forth in Applicants' claimed invention, and thus also fails to teach or suggest a removable trap.

Regarding claim 12, the Examiner notes that it would be obvious to make a probe smaller to more easily travel deeper into the ground. Although this might be conventional wisdom, Applicant respectfully notes, that this conclusion may not necessarily follow, because of an implicit loss of tensile strength caused by a decreased diameter. Indeed, the opposite may be true. Applicants respectfully assert that it would not have been obvious to increase the diameter of the probe and to add internal devices in a cavity, as well as to add multiple membrane interfaces circumferentially about the perimeter of a probe, according to exemplary embodiments of the claimed invention.

Thus, claims 12-22, 26-29, and 31-32 are patentable over the applied references for at least the reasons noted above, and allowance thereof is respectfully requested.

Further, the Examiner asserts that claims 24-25 and 30 are unpatentable over Thompson, and Christy, further in view of U.S. Patent No. 6,405,135 to Adriany (hereinafter "Adriany"). Applicants respectfully traverse this rejection.

For at least the following reasons, Adriany does not address the shortcomings of Thompson and/or Christy, alone or in combination, in teaching or suggesting the elements of amended claims 1 or 4, and the remaining claims depending therefrom.

Applicants also respectfully note that Adriany, alone or in combination with the remaining applied references, also fails to teach or suggest a GPS receiver for georeferencing data acquired from a mobile data acquisition system. Adriany teaches an embedded (underground) Internet sensor system for protecting real property from the consequences of subterranean chemical pollution. The system provides a permanent, in ground, real time monitoring alarm system for identifying an occurrence of contaminants in the subsurface of a property. An onsite processor controls a local

network of sensors and a communication device relays the data to a remotely located database. The local network of sensors are made up of multiple acoustic wave sensors differentiated by sensor coatings configured into a sensor array. As a vapor contaminant passes across the surface of the surface acoustic wave sensor crystals, a shift is caused in the frequency of the acoustic wave. The shift is translated into an electronic signal that is communicated to the onsite processor, which in turn communicates the signal in the form of electronic data to a remote facility wherein remedial measures may be dispatched and appropriate parties notified. The method of dispatch and notification is provided by a Web site system accessible through the Internet. The system is provided as part of a pollution detection and notification service for which a customer pays a subscription fee.

Adriany does not teach or suggest a system including a flow control system or scanning solutions module which may be configured and/or re-configured to use a plurality of operator selectable measurement subsystems prior to exhaust as required by claims 1 and 4. Instead, Adriany is an alarm system, it merely sits and monitors and sets off an alarm in the event of detected pollution. Adriany has no flow control, it only monitors for detection of pollution. Adriany is not reconfigurable, it is secured in the soil in a fixed position. Adriany is fixed, not mobile. Adriany does not georeference sensor or detection measurement system data.

Unlike Adriany, Applicants' invention provides for a mobile data acquisition system which georeferences data acquired from operator-selectable measurement subsystems. Adriany, like Thompson contemplates a fixed leak detection system, not a mobile, measurement system having a GPS receiver as set forth in Applicants' claimed invention.

Therefore, for at least the reasons discussed above with reference to claims 1 and 4, claims 24, 25 and 30 are in condition for allowance and allowance thereof is respectfully requested.

Further, the Examiner asserts that claim 24 is also unpatentable over Thompson, and Christy, further in view of U.S. Patent No. 6,938,506 to Henry (hereinafter "Henry"). Applicants respectfully traverse this rejection.

For at least the following reasons, Adriany does not address the shortcomings of Thompson, Adriany, and/or Christy, alone or in combination, in teaching or suggesting the elements of amended claims 1 or 4, and the remaining claims depending therefrom.

Applicant respectfully notes that Henry, alone or in combination with the remaining applied references, also fails to teach or suggest a GPS receiver.

Applicant respectfully notes that Henry teaches an underwater sensor. Henry does not teach or suggest using the Henry device in an environmental subsurface environment. Henry does not teach or suggest a driven probe. Henry does not teach or suggest a mobile data acquisition system which georeferences data acquired from measurement subsystems. Claim 24 is also believed to be allowable over Henry alone or in combination with the remaining applied references. A person skilled in the relevant art would not have been motivated to combine the underwater sensor of Henry with the fixed subsurface leak detection systems of Adriany, or Thompson to allegedly obtain Applicants claimed invention.

Accordingly, Applicant respectfully notes that claims 1-33 are believed to be in condition for allowance and allowance thereof is respectfully requested.

Application No.: 10/666,558

Docket No.: 36507-193188

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is hereby invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment is respectfully requested.

Dated: August 17, 2006

Respectfully submitted,

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